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Title of Presentation:
Using Enterprise Assessments for SORTS Ratings

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Abstract

This presentation will describe research into a potential new method of computing the supply portion of the Status Of Resources and Training System (SORTS) in the Air Force using enterprise data. Presently supply SORTS ratings are performed by squadron using the Aircraft Sustainability Model (ASM) to compute aircraft availability based on the war plans and assets currently available. A squadron can be rated poor (S-3 or S-4) even though there are sufficient parts in the inventory, just not at that location. The techniques examined in this work use enterprise-wide assets and the entire war plan (not just 1 squadron) to determine how well a particular weapon system is postured to fight that scenario. Additional scenarios were also examined. Finally, methods to correct the deficiencies identified in the assessment were examined. This should allow for achieving the best overall ratings for a weapon system.

Using Enterprise Assessments for SORTS Ratings

5 Jun 08

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Purpose/Overview

- Describe research into a potential new method of computing the supply portion of the Status Of Resources and Training System (SORTS) in the Air Force using enterprise data
- Presently supply SORTS ratings are performed by squadron using the Aircraft Sustainability Model (ASM) to compute aircraft availability based on the war plans and assets currently available on the base
  - A squadron can be rated poor (S-3 or S-4) even though there are sufficient parts in the inventory, just not at that location
- In this work we used enterprise-wide assets and the entire war plan to determine how well a particular weapon system is postured to fight that scenario
  - Additional scenarios were also examined.
  - Methods to execute the assessment were examined

Agenda

- Background and Description
- Assessment Part
- Execution Part

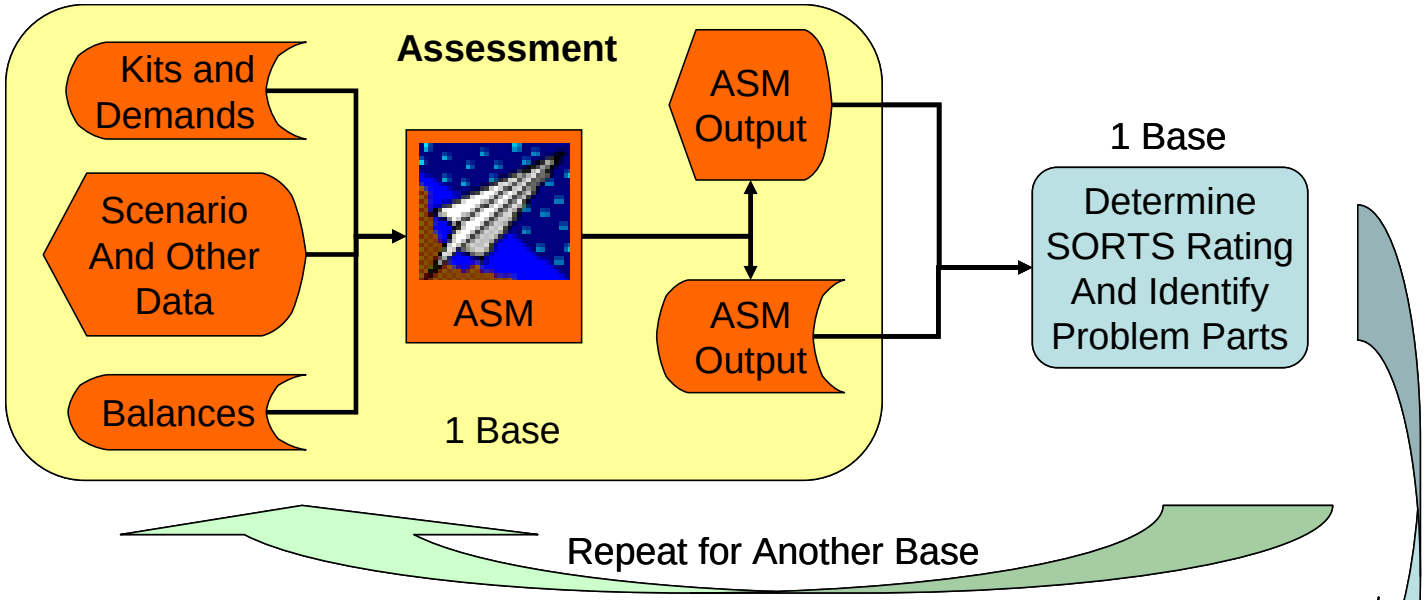
Agenda

- **Background and Description**
  - **SORTS**
  - **Current Process**
  - **Why an Enterprise System**
  - **Future Enterprise Process**
- Assessment Part
- Execution Part

SORTS

- Status of Resources and Training System (SORTS) is a system the military uses to evaluate the readiness for the next major war
- The SORTS rating in the Air Force consists of four pieces
  - Equipment Condition (R)
  - Supply and Equipment (S)
  - Training (T)
  - Personnel (P)
- The supply SORTS assessment (sometimes referred to as the S-rating) evaluates the readiness spares package (RSP)
  - A high S-rating means the serviceable parts in the kit are sufficient to generate required sorties
  - A low S-rating indicates the unit may not be able to achieve its wartime mission requirement

Current Assessment Process



- Each base runs through the Aircraft Sustainability Model (ASM) process and determines their SORTS rating and problem parts list
- Results are reported to the lead major command who consolidates the results
- No fleet-wide assessment or rating is provided

Why an Enterprise System?

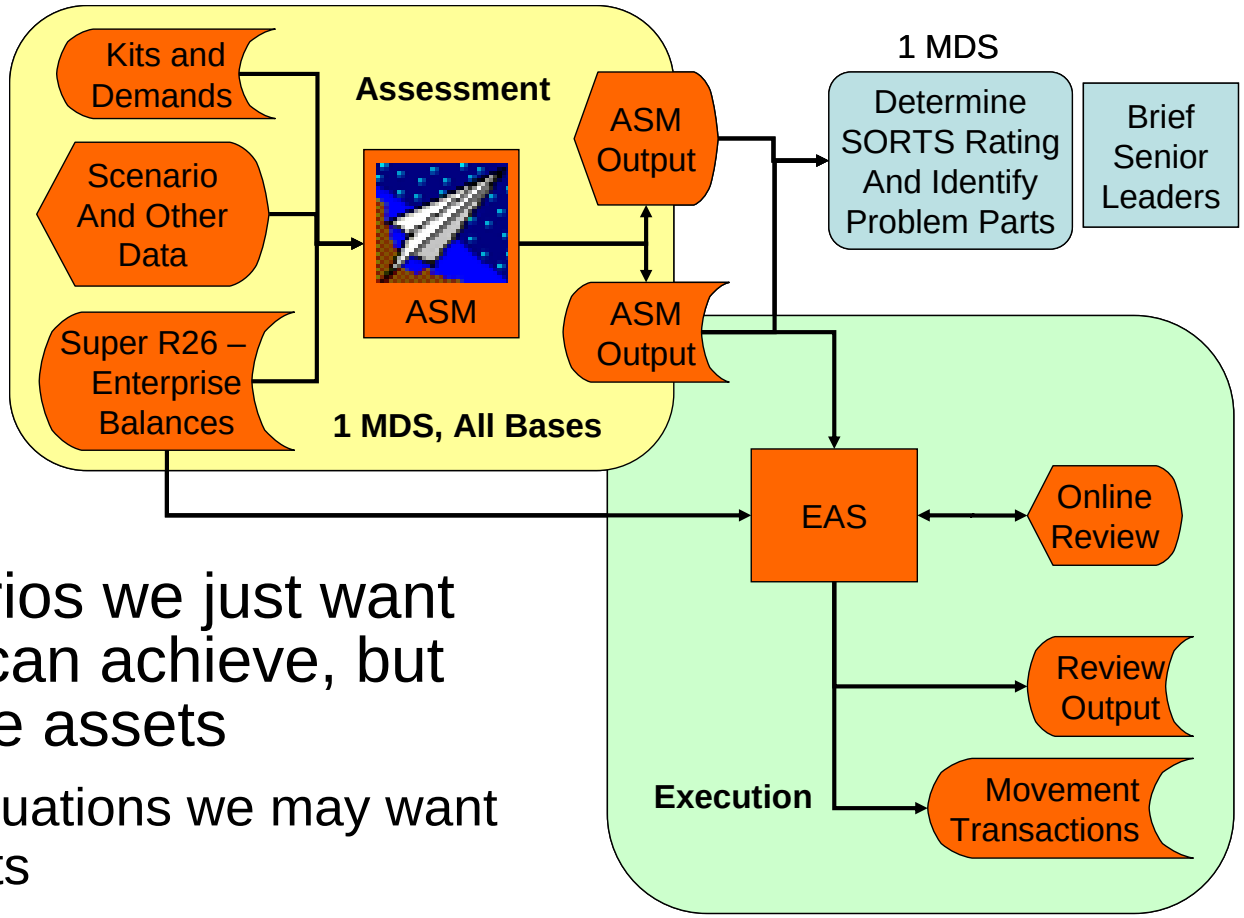
- RSP kits are enterprise assets, not just base assets
- Total capability is more than what each base has in their kit
  - Reporting individual base assessments is not an accurate measure of the fleet capability
- Base assessment and reporting process is error prone
- Assessing the supply support is more than just the strategic viewpoint used in the SORTS assessments
  - The ability to determine readiness to cover nearer term/smaller scale operations is also important
- The AF Global Logistic Support Center should have the ability to move assets where they are needed
  - Bases have no enterprise view to determine enterprise capability

Prototype Changes

- Three major changes were required to make this happen
- Input
  - Developed a “super R26” with worldwide serviceable balance data for a given fleet
- Assessment
  - Developed an ability within ASM for various enterprise allocation schemes
  - Added abilities to read and output fleet-wide data
- Execution
  - Added an ability to source and generate transactions to reallocate assets

The New Prototype Enterprise System

- The Assessment system is similar to current processes to determine the availability and compute the achievable levels
- For certain scenarios we just want to know what we can achieve, but don't want to move assets
  - However, other situations we may want to reallocate assets
  - So we added an execution part to optimally source and generate transactions to move assets

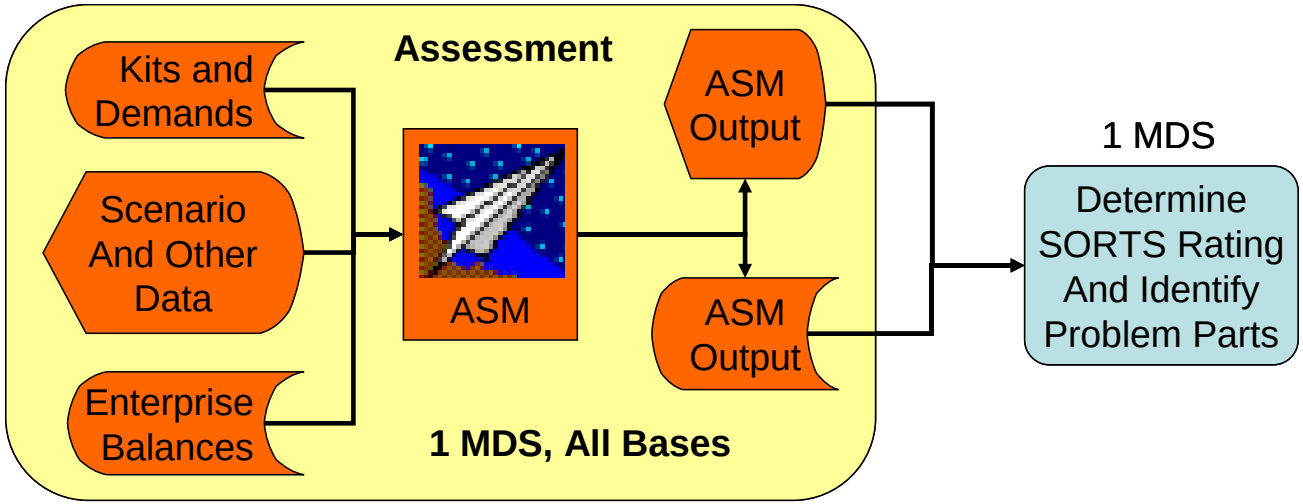


Agenda

- Background and Description
- **Assessment Part**
  - **Changes to the Assessment Model**
  - **New Scenarios**
- Execution Part

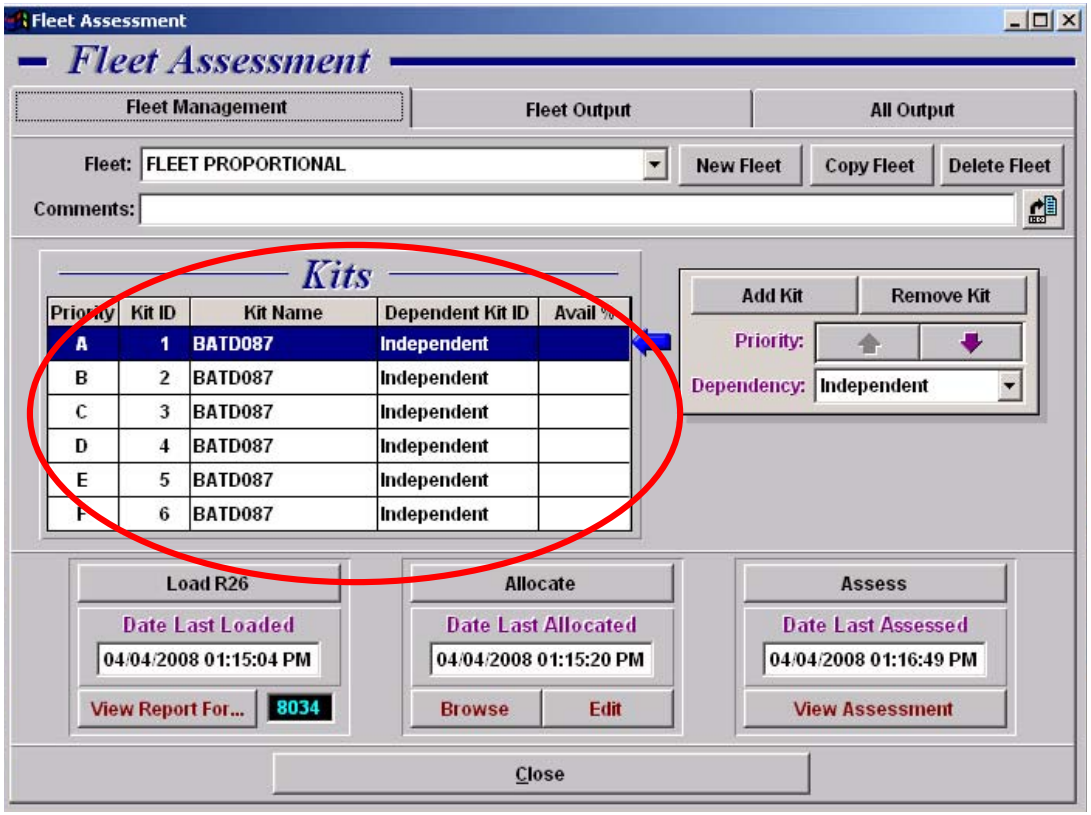
Assessment Process

- Assessments are done today using **LMI's PC Aircraft Sustainability Model (ASM®)**
  - A single place where the entire computation occurs
  - ASM computes availability, sorties flown, fill rates, and problem parts which is used to determine an S-rating
  - **The Enterprise Assessment prototype follows the same steps, just for an entire MDS not just 1 base**
- Provides
  - An assessment that considers all assets
  - Both a base and a fleet-wide rating and problem items
  - Potential for multiple scenarios



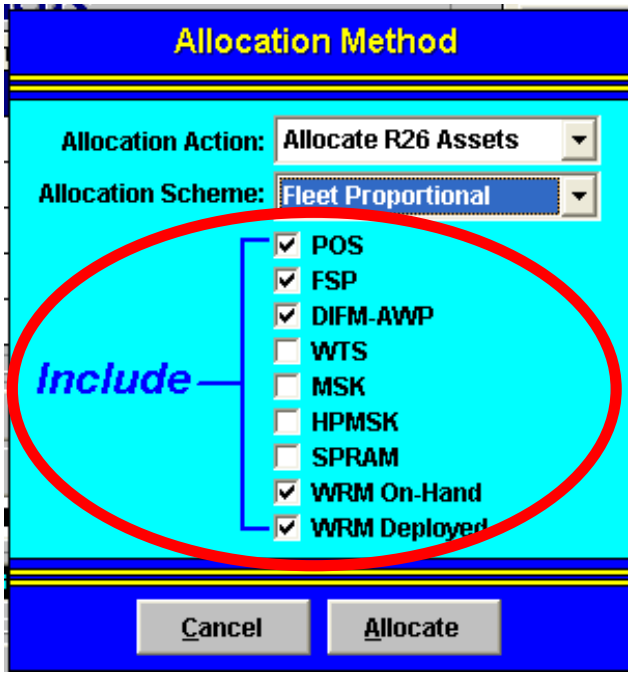
Multiple Kits

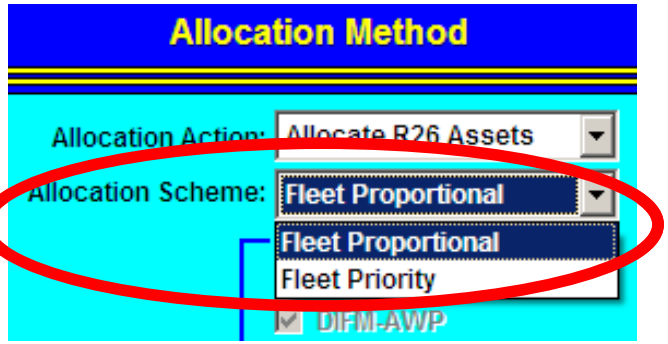
- ASM allows for reading multiple kits
- Kits do not need to have the same range
- Recommend using all kits for a single weapon system
- However you can use multiple weapon systems if desired



Allocating Methods

- The user can select the types of assets to include
- The user also selects from 2 fleet allocations
  - Fleet Proportional
  - Fleet Priority

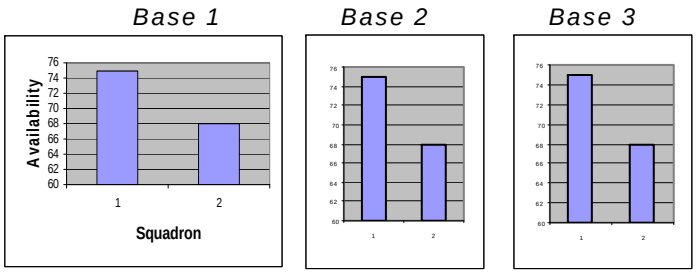




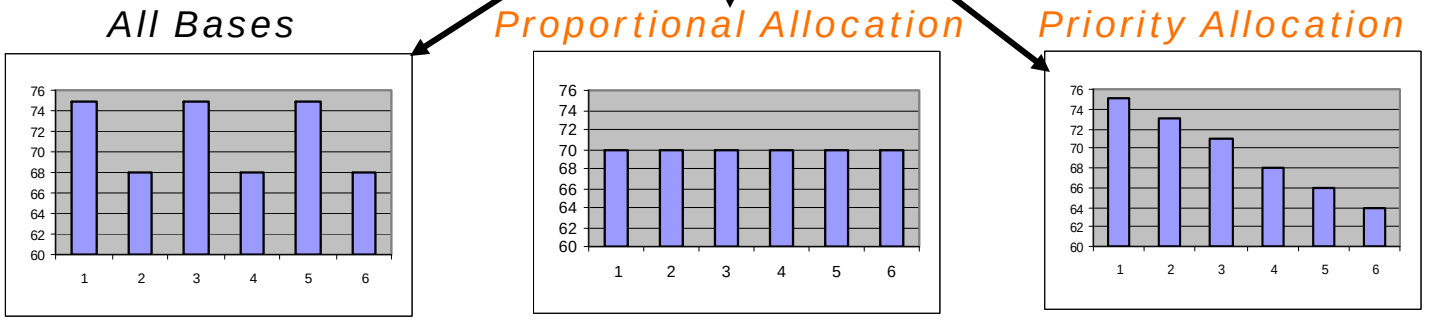
Expand ASM Assessments from Base to Enterprise

- Example: F-15E is at 3 bases, 2 squadrons each
- ASM forecasts availability by squadron, base, and now enterprise
- **New methods for fleet allocation**

Current Base View



Enterprise View

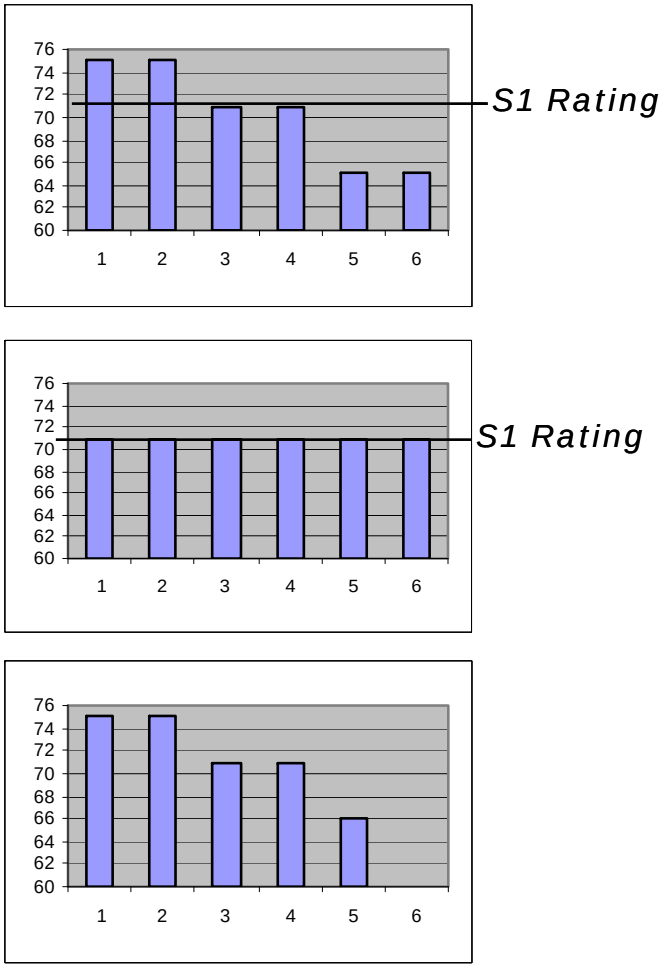


Enterprise Allocation

- **Enterprise allocation***:* two new alternatives using all available spares
  - **Proportional Allocation** spreads spares evenly based upon authorization (fill rate):
    - Goal: bring all squadrons to the same performance
    - Starts with “pile of spares” and empty kits
  - **Priority Allocation** fills top priority squadron optimally (bang/buck) until availability target or item authorization is reached
    - Goal: provide a flexible option for different scenarios
    - Fills up to DSO target for each squadron – generates an achievable target level

New Enterprise Priority Allocation

- Distributes enterprise assets across squadrons
  - Base Allocation: Assess general performance across fleet
  - Set availability targets to S1 rating (e.g., 71%) to see how many squadrons can achieve it
  - Set squadron availability targets based upon priority categories (EAF cycle) :
    - Deployed = 75%
    - Next to deploy = 71%
    - Later AEF = 65%
    - Just returned = remaining assets



Possible Scenarios

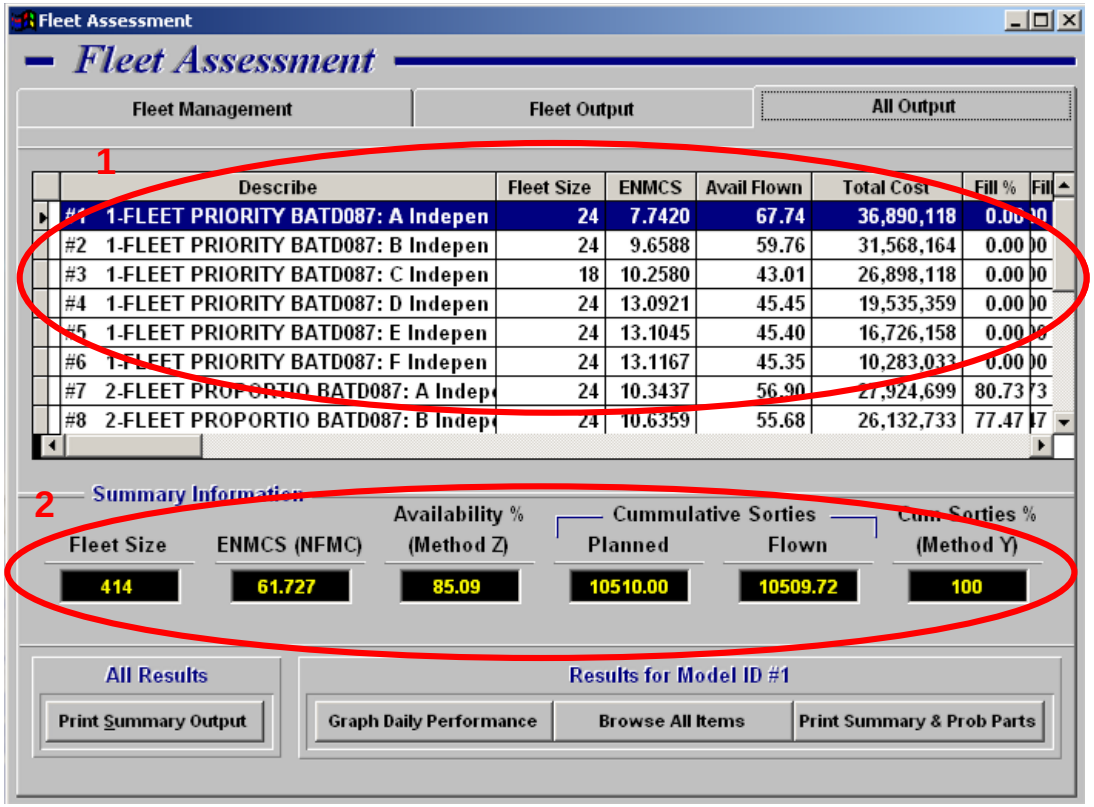
- Traditionally, SORTS assessments are computed using a WMP-5 scenario
  - This is useful for strategic planning, but does not inform senior leadership about the ability to cover near-term contingencies
- If assessments are being done **centrally** and for an **entire MDS** in **not much more time** than a single base, then the concept of using multiple scenarios becomes feasible
  - GLSC can perform enterprise assessments in about the same time as a base assessing its squadron
- Potential scenarios include
  - Planning scenarios: WMP-5 or WMP-4
  - Regular rotations: EAF construct
  - Other contingencies

Potential Assessments

- WMP-5 by Squadron – Assess by squadron like today – what is each squadron's on-base strategic ability
- WMP by MDS – Enterprise assessment against a wartime planning scenario – what is the fleet's strategic ability
  - Optimally allocate all available assets
- Contingency Assessment – Assess using enterprise assets against a specific scenario with squadron DSO targets to identify optimal mix of available assets – what can be done today

Prototype Assessment Results

- All kits are shown with their individual performance (1)
- Fleet totals are available at the bottom of the screen (2)
- Can select any squadron to examine problem parts and daily performance
- Will also be able to examine problem items by fleet



Agenda

- Background and Description
- Assessment Part
- **Execution Part**
  - **Overview**
  - **Execution Assessment Sourcing Software**

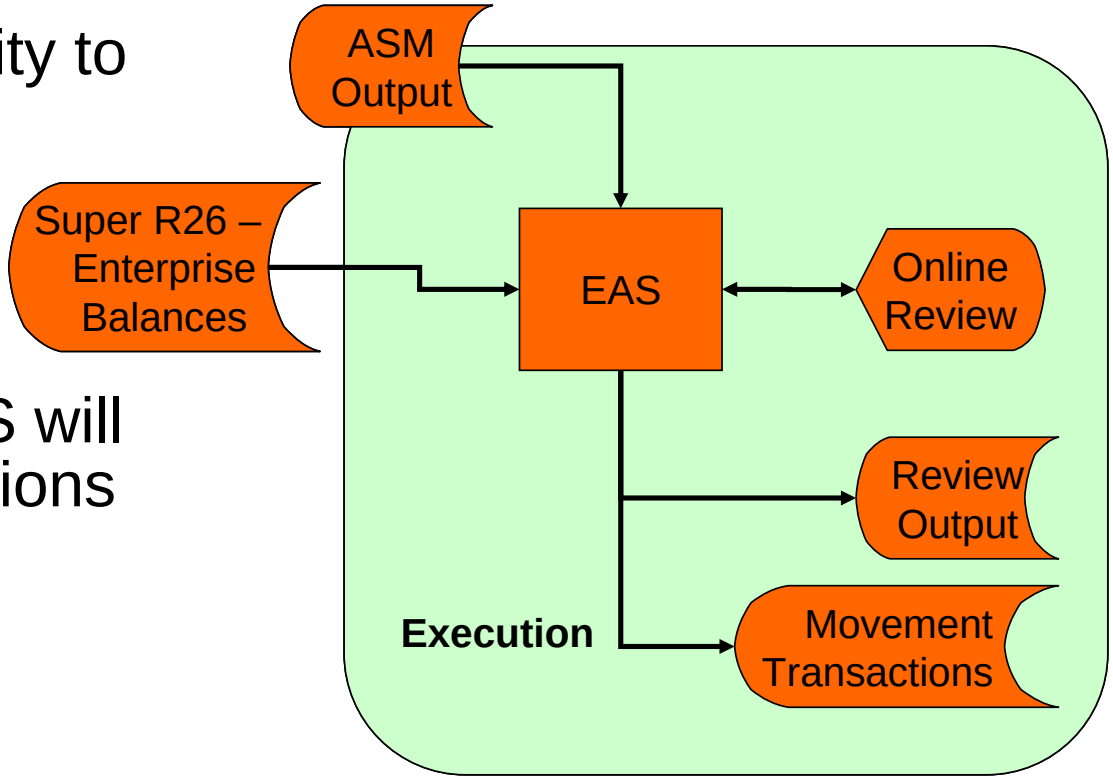
Execution Overview

- For certain scenarios we just want to know what we can achieve, but don't want to move assets
  - However, other situations we may want to reallocate assets
  - So we added an execution part to optimally source and generate transactions to move assets
- Execution Part follows the Assessment Part
  - Uses output from the Assessment, especially the "achievable target"
- Determines which assets should be reallocated to which kit to achieve best possible support at least cost and mission impact

Kit – Base	Auth Qty	Achieve Tgt	Current SB	Final SB
1 – Base A	6	6	4	6
2 – Base B	4	4	2	4
Base C			3	1
Base D			4	3
Base E			4	3
	10	10	13	13

Enterprise Assessment Sourcing (EAS)

- The EAS program uses the ASM output and a set of rules to source the assets
- EAS provides for an online review of the results
- The user has the ability to override the system
  - Determine items that will/won't move
  - Change sourcing
- If user approves, EAS will generate the transactions to move the items



Sourcing Logic

- Logic considers base priority, geographical area, and degree of support (fill rate)
  - Source from lowest priority base at the closest geographical region with highest fill rate to meet the “optimal” achievable aircraft availability
- Rules to prioritize sourcing of existing assets
  - POS excess, RSP excess, least hurt (fill rate)
  - Lower control limits (such as expected pipeline) for non-RSP bases
- Apply by MDS
  - Common parts not accounted for yet

Rules

1. Source from the same base up to all Peacetime assets and all Wartime above the targets
2. Source from any other base with Peacetime excess
   a. Source by Geographic cat
3. Source from any other base with Wartime excess
   a. Source by Geographic cat
4. Take all the Peacetime except those without kits, leave them Pipeline
   a. Source by Geographic cat
      i. Source by total Fill Rate
5. Take all the Wartime > Tgt except those with Tgt =0, leave them 1
   a. Source by Geographic cat
      i. Source by total Fill Rate
6. Take everything down to 0 Peacetime and Wartime Tgt
   a. Source by Geographic cat
      i. Source by total Fill Rate
7. Nothing to source: No Balance (Peacetime + Wartime = 0) or Balance, but sub-optimal (Peacetime = 0, Wartime < Wartime Tgt)

Rule Notes

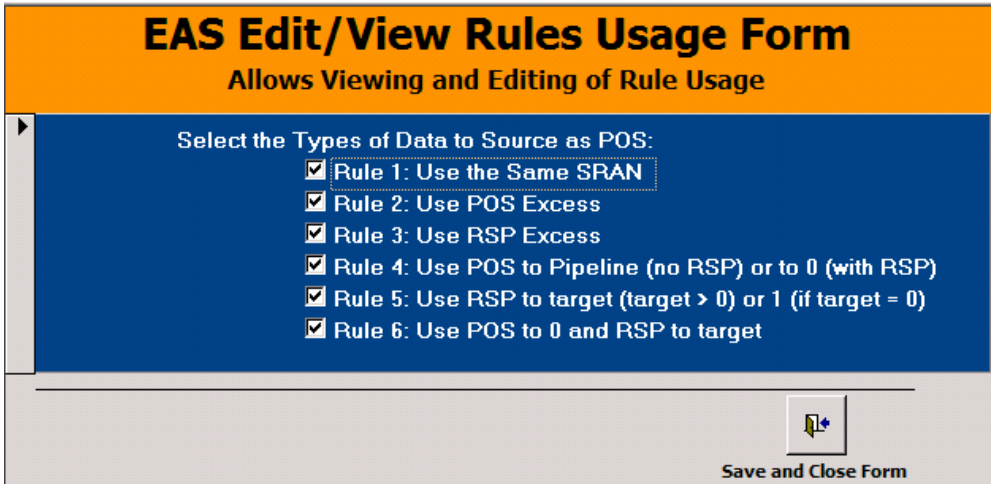
- Geographic Cat
  - Source from area at the top to fill a base in area on the left
  - Chart provides geographic bands

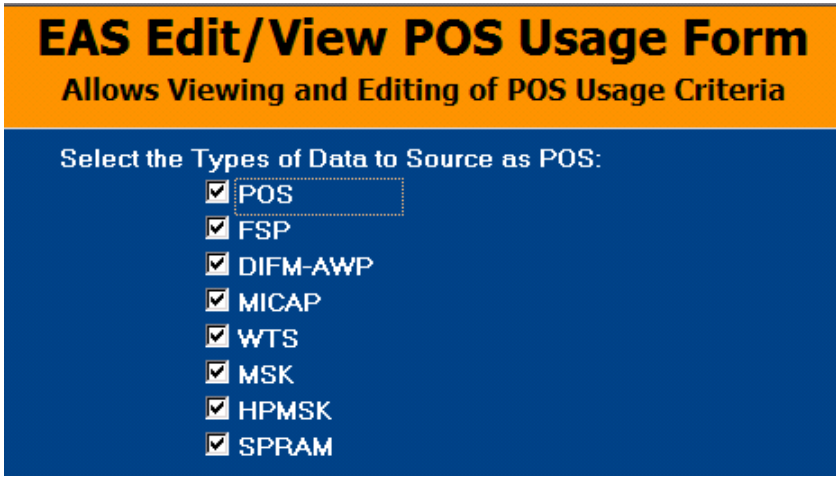
	Source (file from this area):				
To Fill:	**Deployed**	**USAFE**	**PACAF**	**Eastern CONUS**	**Western CONUS**
Deployed	Last	2nd	2nd	1st	1st
USAFE	Last	1st	4th	2nd	3rd
PACAF	Last	4th	1st	3rd	2nd
Eastern CONUS	Last	3rd	4th	1st	2nd
Western CONUS	Last	4th	3rd	2nd	1st

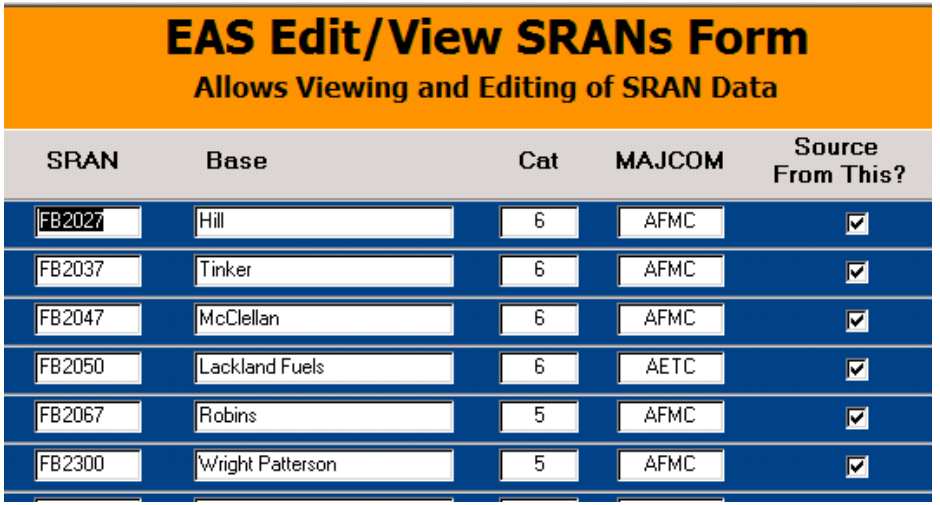
- Total Fill Rate
  - FR = [(Peacetime SB + Wartime SB) / (Peacetime Level + Wartime Tgt)]

Editing Data and Rules

- User can edit
  - Rules to use
  - Peacetime types to consider
  - Base data, especially bases to not source from
  - Geographic category definitions

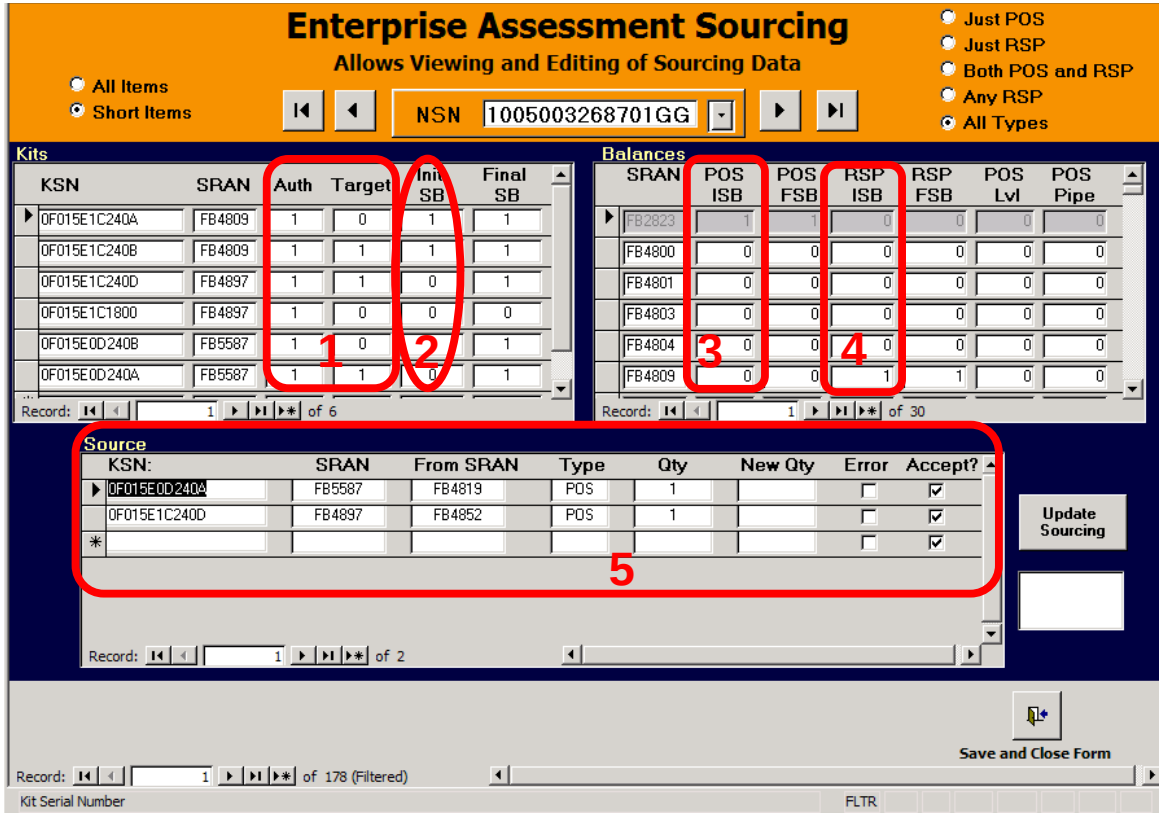






EAS Online Review

- 1. Kit Auth Qty = 1 for each kit, Achievable Targets from ASM range from 0 to 1
- 2. Kit Initial SB mostly 0, some with 1
  - So we need to source many assets
- 3. There are 10 POS assets total at a few bases, many with 0
- 4. There is 3 RSP assets total at 2 bases, rest 0
- 5. Source the 2 available assets
  - Move 1 from POS at FB4819 to the kit
  - Move 1 from POS at FB4852 to the kit



Movement

- Once identified and approved, the user will be able to create a file of transactions to move the assets
- These will be text files that should be sent to stock control to load on each base's system

Summary

- LMI developed a prototype enterprise assessment and execution capability
  - Initial prototype is ready for use
  - Continued development will result in an improved SORTS assessment and tools to make it happen
  - Need to develop procedures for use of the model and SORTS
- The prototype capability allows for a fleet-wide assessment
  - RSP kits are enterprise assets, not just base assets
  - Total capability is more than what each base has in their kit
- Assessing the supply support is more than just the strategic viewpoint used in the SORTS assessments
  - This ability can determine readiness to cover nearer term/smaller scale operations

Future Enhancements

- Super R26
  - Re-write SR26 into standard products (ESS or Discoverer)
  - Separate HPMSK and CHPMSK
  - Obtain depot assets
- ASM
  - Usability enhancements
  - Functionality enhancements
- EAS
  - Add movement transaction capability
  - Separate IRSP/MRSP
  - Re-write into standard product (ESS)
- Other
  - CRSP
  - CHPMSK
  - Common Items
  - New SORTS Ratings definitions

Questions

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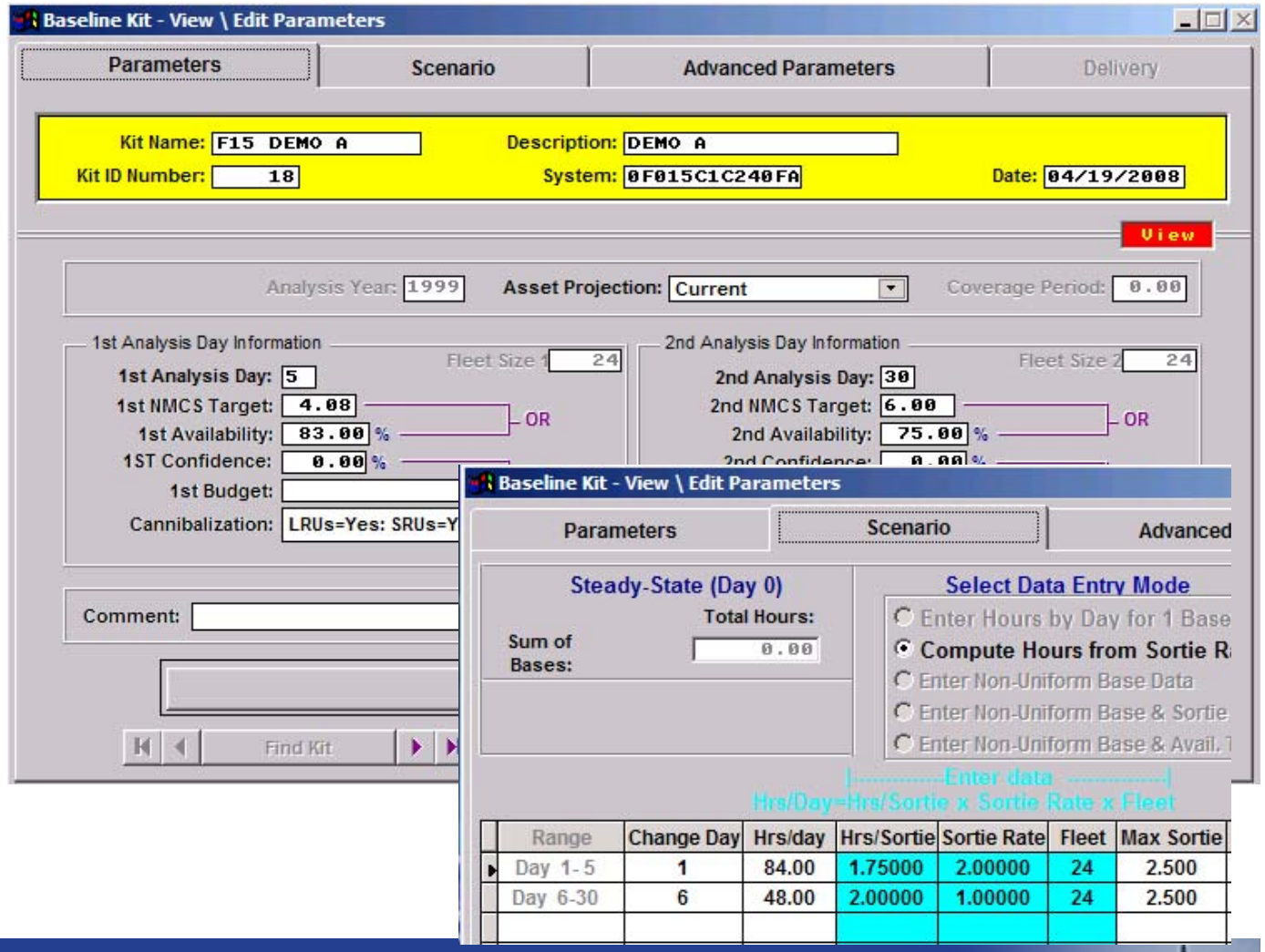
Existing Base Allocation

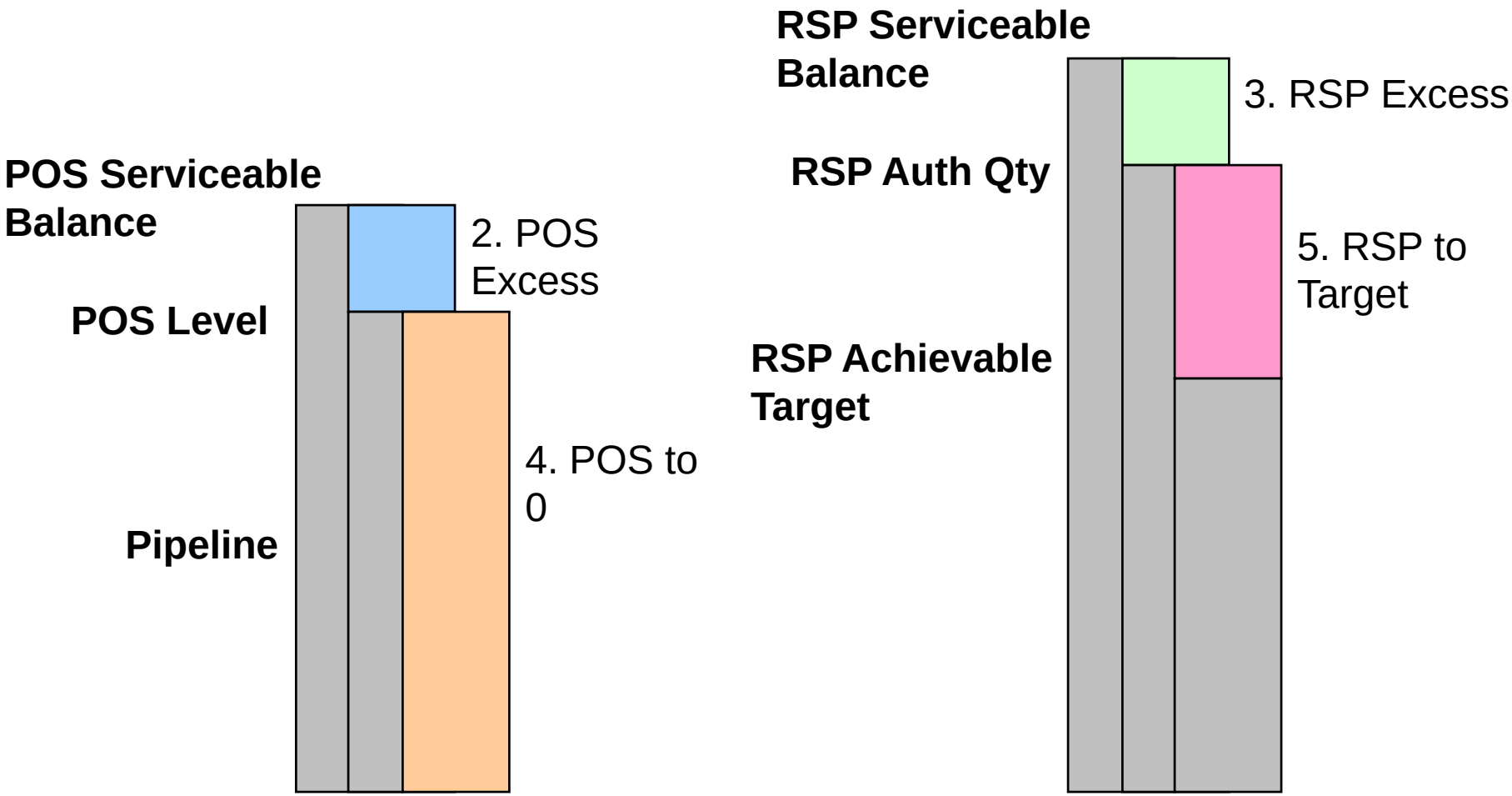
- **Base allocation** currently uses *Organization Priority* or *Priority Reallocation*
  - **Organization Priority** starts with ***existing kit*** and ***allocates (robusts) base peace spares*** to highest priority unit until filled and then next highest priority unit
  - **Priority Reallocation** starts with ***an empty kit*** and fills highest priority squadron up to authorization level with ***base peace and wartime spares*** and then applies remaining spares to fill next squadron and so on

ASM Scenario

- The target and scenarios data are entered as the files are read
- These can be edited and changed later



Sourced Base with RSP



Sourced Base without RSP